WHAT IS CLAIMED IS:

1. An optical module comprising:

a substrate having first and second regions and first and second optical waveguides, said first and second regions being arranged along a predetermined plane, and said first and second optical waveguides being provided in said first region, and said first and second optical waveguides extending in a direction of a predetermined axis;

a semiconductor light emitting device including a semiconductor light emitting element, said semiconductor light emitting device being provided in the second region, and said semiconductor light emitting element being optically coupled to said second optical waveguide;

a semiconductor light receiving device including a light receiving element, said semiconductor light receiving device being provided in said first region; and

an optical device including an optical element, said optical element being provided on said first region so as to reflect a part of incident light from said light emitting element to said light receiving element and so as to transmit a part of said incident light;

wherein said optical element is provided between

said first and second optical waveguides, and

wherein said optical element is optically coupled to said first and second optical waveguides.

2. The optical module according to claim 1, further comprising:

a semiconductor driving element electrically connected to said semiconductor light emitting element;

a mount member, said semiconductor driving element being mounted on said mount member;

wherein said substrate and said mount member are arranged along said predetermined plane.

3. The optical module according to claim 1, further comprising a semiconductor driving element electrically connected to said semiconductor light emitting element;

wherein said substrate has a third region, said first to third regions being arranged along said predetermined plane, and

wherein said semiconductor driving element is provided in the third region of said substrate.

4. The optical module according to claim 1, wherein said substrate further includes at least one third optical waveguide and at least one fourth optical waveguide, said third optical waveguide and said fourth optical waveguide extending in a direction

of another predetermined axis,

wherein said semiconductor light emitting device further includes another semiconductor light emitting element provided in said second region,

wherein said optical device further includes another optical element provided between said third and fourth optical waveguides,

wherein said fourth waveguide is optically coupled to said other semiconductor light emitting element,

wherein said semiconductor light receiving device further includes another light receiving element provided in said first region

wherein said other semiconductor light emitting element is electrically connected to said semiconductor driving element,

wherein said other light receiving element is optically coupled to the other optical element,

wherein said other optical element is optically coupled to said third and fourth optical waveguides,

wherein said other optical element is provided on said first region so as to reflect a part of incident light from said other light emitting element to said other light receiving element and so as to transmit a part of said incident light, and

wherein said other optical element is provided

between said third waveguide and said fourth waveguide.

5. The optical module according to claim 1,

wherein said substrate includes a groove provided in said first region,

wherein said substrate has a pair of edges extending in said direction of said predetermined axis,

wherein said groove extends from one of said pair of edges to the other and extends along a reference plane intersecting with said predetermined plane, and

wherein said optical device is provided in said groove.

6. The optical module according to claim 5,

wherein an optical axis of said first optical waveguide extends along a reference axis,

wherein said reference axis forms an acute angle with said reference plane.

7. The optical module according to claim 1,

wherein said first region has a primary surface,

wherein said primary surface has a first area and a second area arranged along said predetermined axis,

wherein said first waveguide is located in said first area,

wherein said second waveguide is located in said second area, and

wherein said semiconductor light receiving device is located on said second area.

8. The optical module according to claim 1,

wherein said optical device has a transparent substrate,

wherein light from said semiconductor light emitting element can pass through said transparent substrate,

wherein said transparent substrate has a pair of surfaces, each extending along a plane intersecting with said predetermined axis, and

wherein one of said pair of surfaces is inclined so as to reflect a part of incident light from said light emitting element to said light receiving element.

9. The optical module according to claim 1,

wherein said optical device has a transparent substrate and a dielectric multilayer film,

wherein light from said semiconductor light emitting element can pass through said transparent substrate,

wherein said transparent substrate is inclined so as to reflect a part of incident light from said light emitting element to said light receiving element, and

wherein said dielectric multilayer film is provided on said inclined surface of said transparent

substrate.

10. The optical module according to claim 1, further comprising a transparent resin, said transparent resin being provided on said substrate so as to cover said semiconductor light emitting element, said light receiving element, and said optical element,

wherein light from said semiconductor light emitting element can pass through said transparent resin.

11. The optical module according to claim 1, wherein said light receiving element has a light entrance surface for receiving light from said optical element,

wherein said light receiving element is located such that said light entrance surface is directed toward said second optical waveguide, and

wherein said light receiving element is a back illuminated type semiconductor light receiving element.

12. The optical module according to claim 1, further comprising a lead frame, said lead frame having an island and a plurality of lead terminals, said substrate being mounted on said island.

13. The optical module according to claim 1, further comprising a resin, said resin containing said

substrate, said semiconductor light emitting element, said light receiving element, and said semiconductor driving element therein.

14. An optical module comprising:

a substrate having first and second regions arranged along a predetermined plane;

a first optical fiber provided in said first region of said substrate, said first optical fiber extending in a direction of a predetermined axis;

a second optical fiber provided in said first region of said substrate, said second optical fiber extending in said direction of said predetermined axis;

a semiconductor light emitting device provided in the second region, said semiconductor light emitting device including a semiconductor light emitting element, and said semiconductor light emitting element being optically coupled to said second optical fiber;

a semiconductor driving element electrically connected to said semiconductor light emitting element;

an optical device including an optical element, said optical element being provided in said first region so as to reflect a part of incident light and so as to transmit a part of said incident light; and

a semiconductor light receiving device including

a light receiving element, said light receiving element being provided in said first region, and said light receiving element being optically coupled to said optical element,

wherein said optical element is provided between said first optical fiber and said second optical fiber, and

wherein said optical element is optically coupled to said first optical fiber and said second optical fiber.

15. The optical module according to claim 14, further comprising a mount member, said semiconductor driving element is mounted on said mount member,

wherein said mount member and said substrate are arranged along said predetermined plane.

16. The optical module according to claim 14,

wherein said substrate further includes a third region,

wherein said first to third regions are arranged along said predetermined plane, and

wherein said semiconductor driving element is provided on said third region.

17. The optical module according to claim 14, further comprising at least one third optical fiber and at least one fourth optical fiber, said third optical fiber and said fourth optical fiber extending

in a direction of another predetermined axis,

wherein said semiconductor light emitting device further includes another semiconductor light emitting element provided in said second region,

wherein said other semiconductor light emitting element is optically coupled to said fourth optical fiber,

wherein said semiconductor light receiving device further includes another light receiving element provided in said first region,

wherein said optical device further includes another optical element provided between said third and fourth optical fibers,

wherein said other optical element is provided on said first region so as to reflect a part of incident light from said other light emitting element to said other light receiving element and so as to transmit a part of said incident light,

wherein said other optical element is optically coupled to said third and fourth optical fibers,

wherein said other light receiving element is optically coupled to said other optical element, and

wherein said other semiconductor light emitting element is electrically connected to said semiconductor driving element.

18. The optical module according to claim 14,

wherein said first region has a primary surface,

wherein said primary surface has a first area and a second area arranged along said predetermined axis,

wherein said first optical fiber is located in said first area,

wherein said second optical fiber is located in said second area, and

wherein said semiconductor light receiving device is located on said second area.

19. The optical module according to claim 14, wherein said second fiber is provided between said light receiving element and said substrate.

20. The optical module according to claim 14, further comprising a mount component, said semiconductor light receiving device is mounted on said mount component,

wherein said second optical fiber is provided between said mount component and said substrate.

21. The optical module according to claim 14,

wherein said substrate includes a groove provided in said first region,

wherein said substrate has a pair of edges extending in said direction of said predetermined axis,

wherein said groove extends from one of said pair of edges to the other and extends along a reference

plane intersecting with said predetermined plane, and

wherein said optical device is provided in said groove.

22. The optical module according to claim 21,

wherein an optical axis of said first optical fiber extends along a reference axis,

wherein said reference axis forms an acute angle with said reference plane.

23. The optical module according to claim 14,

wherein said optical device has a transparent substrate,

wherein light from said semiconductor light emitting element can pass through said transparent substrate,

wherein said transparent substrate has a pair of surfaces, each extending along a reference plane intersecting with said predetermined axis, and

wherein one of said pair of surfaces is inclined so as to reflect a part of incident light from said light emitting element to said light receiving element.

24. The optical module according to claim 14,

wherein said optical device has a transparent substrate and a dielectric multilayer film,

wherein light from said semiconductor light emitting element can pass through said transparent

substrate, and

wherein one of said pair of surfaces is inclined so as to reflect a part of incident light from said light emitting element to said light receiving element,

wherein said dielectric multilayer film is provided on said inclined surface of said transparent substrate.

25. The optical module according to claim 14, further comprising a transparent resin, said transparent resin being provided on said substrate so as to cover said semiconductor light emitting element, said light receiving element, and said optical element,

wherein light from said semiconductor light emitting element can pass through said transparent resin.

26. The optical module according to claim 14, wherein said light receiving element has a light entrance surface which receives light from said optical element,

wherein said light receiving element is located such that said light entrance surface is directed toward said first optical fiber, and

wherein said light receiving element is a back illuminated type semiconductor light receiving

element.

27. The optical module according to claim 14, further comprising a lead frame having an island and a plurality of lead terminals, said substrate being mounted on said island.

28. The optical module according to claim 14, further comprising a resin, said resin containing said substrate, said semiconductor light emitting element, said light receiving element, and said semiconductor driving element therein.